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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,829	04/13/2004	Shmuel Levy	P-6389-US	3259
49444	7590	05/03/2007		
PEARL COHEN ZEDEK LATZER, LLP 1500 BROADWAY, 12TH FLOOR NEW YORK, NY 10036			EXAMINER NGUYEN, LEON VIET Q	
			ART UNIT 2611	PAPER NUMBER
			MAIL DATE 05/03/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/822,829	Applicant(s) LEVY, SHMUEL	
	Examiner Leon-Viet Q. Nguyen	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>8/10/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 8/10/2005 was filed after the mailing date of 8/10/2005. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. **Claims 28-32 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.**

Claims 28-32 pertains solely to instructions that are not embodied in any computer-readable media.

"Similarly, computer programs claimed as computer listings per se, i.e., the descriptions or expressions of the programs, are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional

interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32F.3d at 1583-84, 32 USPQ2d at 1035. See Interim Guidelines on 35 USC 101, Annex IV (a):
Functional Descriptive Material.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claim 1, 4, 6, 7, 9, 11, 13, 16, 17, 25, 26, 28, and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Greenstein et al (US6131016).**

Re claim 1, Greenstein discloses a method comprising:

adaptively selecting a coding mode of an orthogonal frequency division multiplexing sub-carrier symbol of a data stream (col. 3 lines 59-63, col. 4 line 63 – col. 5 line 1, it would be inherent to have a coding mode for the transmitted data) according to a received channel state information that relates to the orthogonal frequency division multiplexing sub-carrier (col. 4 lines 58-63).

Re claim 4, Greenstein discloses a method comprising:

adaptively grouping receivers according to a desired coding mode received with the received channel state information (col. 4 lines 31-34 and lines 58-63. It would be inherent to group all the receivers if there is only a single coding mode).

Re claim 6, Greenstein discloses a method comprising:

coding symbols of a first subset of sub-carriers of an orthogonal frequency division multiplexing channel in a first mode (col. 3 lines 5-6 and 59-62, the OFDM signal transmitted with the first pilot tone is interpreted to be in a first mode); and

coding symbols of a second subset of sub-carriers of an orthogonal frequency division multiplexing channel in a second mode (col. 3 lines 6-7 and 59-62, the OFDM signal transmitted with the first pilot tone is interpreted to be in a second mode).

Re claim 7, Greenstein discloses a method comprising:

transmitting a first group of symbols of sub-carriers of an orthogonal frequency division multiplexing channel via a first antenna (transmission circuit 202 transmitting via antenna 15 in fig. 2A, col. 3 lines 59-62); and

transmitting a second group of symbols of sub-carriers of an orthogonal frequency division multiplexing channel via a second antenna (transmission circuit 203 transmitting via antenna 16 in fig. 2A, col. 3 lines 59-62).

Re claim 9, Greenstein discloses an apparatus comprising: a coding mode selector (processor 230 in fig. 2A) to select a coding mode of a symbol of an orthogonal

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frequency division multiplexing sub-carrier (col. 4 line 63 – col. 5 line 7) according to a received channel state information that related to the orthogonal frequency division multiplexing sub-carrier (col. 5 lines 1-7).

Re claim 11, Greenstein discloses an apparatus comprising a multiple-in-multiple-out receivers transmitters system (fig. 1, col. 4 lines 31-35. The base station has multiple transmit antennas and the receiving terminal may have multiple receive antennas).

Re claim 13, Greenstein discloses an apparatus comprising:

a first transmitter to transmit the symbol (transmit antenna 15 in fig. 2A); and

a second transmitter (transmit antenna 16 in fig. 2A) to transmit a coded symbol that is coded according to one or more coding mode (it would be inherent to code a symbol to be transmitted in a receiver).

Re claim 16, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 1. It would be inherent to have an apparatus to perform the method as claimed in claim 1. Furthermore, the predetermined criterion is interpreted to be the same as the received channel state information in claim 1.

Re claim 17, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 7.

Re claim 25, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 16. It would be inherent to have a station including the coding mode selector as claimed in claim 16.

Re claim 26, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 17.

Re claim 28, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 1. It would be inherent to have a storage medium, having stored instructions thereon, which executes the method as claimed in claim 1.

Re claim 31, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 4.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2, 3, 5, 8, 12, 14, 15, 18, 21, 23, 24, 27, 29, 30, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greenstein et al (US6131016) and further in view of the background of applicant's specification (hereby referred to as the background).

Re claim 2, Greenstein fails to teach a method comprising coding the data stream generated by a multiple-in multiple-out receivers-transmitters system in a multiplexing mode. However the background teaches a MIMO system including a multiplexing MIMO system (§0002), which operates in a multiplexing mode.

Therefore taking the combined teachings of Greenstein and the background as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the multiplexing MIMO system of the background into the method of Greenstein. The motivation to combine the background and Greenstein would be to prevent the entire transmitted symbol from being in error (§0003).

Re claim 3, Greenstein fails to teach a method comprising coding the data stream generated by a multiple-in multiple-out receivers-transmitters system in a diversity mode. However the background teaches a MIMO system including a diversity MIMO system (§0002), which operates in a diversity mode.

Therefore taking the combined teachings of Greenstein and the background as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the diversity MIMO system of the background into the method of Greenstein. The motivation to combine the background and Greenstein would be to gain sensitivity by exploiting multi path propagation channel property (§0002).

Re claim 5, Greenstein teaches a method comprising:

coding symbols of a first subset of sub-carriers of an orthogonal frequency division multiplexing channel (transmission circuit 202 in fig. 2A, col. 3 lines 5-6 and lines 59-62); and

coding symbols of a second subset of sub-carriers of an orthogonal frequency division multiplexing channel (transmission circuit 203 in fig. 2A, col. 3 lines 6-7 and lines 59-62).

Greenstein fails to teach wherein the first subset of sub-carriers is coded in a multiplexing mode and the second subset of sub-carriers is coded in a diversity mode. However, the background teaches the use of a diversity MIMO system or a multiplexing MIMO system (§0002). One of ordinary skill in the art would have found it obvious to use each system in a MIMO system.

Therefore taking the combined teachings of Greenstein and the background as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the diversity and multiplexing MIMO systems of the

background into the method of Greenstein. The motivation to combine the background and Greenstein would be to gain sensitivity by exploiting multi path propagation channel property (§0002) and to prevent an entire transmitted symbol from being in error (§0003).

Re claim 8, Greenstein teaches a method wherein transmitting the second group of symbols comprises: transmitting symbols of the first subset of sub-carriers of an orthogonal frequency division multiplexing channel (col. 3 lines 59-62) and symbols of the second subset of sub-carriers of an orthogonal frequency division multiplexing channel (col. 59-62).

Greenstein fails to teach wherein the first subset of sub-carriers is transmitted in a diversity mode and the second subset of sub-carriers is coded in a multiplexing mode. However, the background teaches the use of a diversity MIMO system or a multiplexing MIMO system (§0002). One of ordinary skill in the art would have found it obvious to use each system in a MIMO system.

Therefore taking the combined teachings of Greenstein and the background as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the diversity and multiplexing MIMO systems of the background into the method of Greenstein. The motivation to combine the background and Greenstein would be to gain sensitivity by exploiting multi path propagation channel property (§0002) and to prevent an entire transmitted symbol from being in error (§0003).

Re claim 12, Greenstein fails to teach an apparatus wherein the coding mode comprises at least one of a diversity mode and a multiplexing mode. However the background teaches coding incoming bits in a diversity MIMO system (¶0002).

Therefore taking the combined teachings of Greenstein and the background as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the diversity MIMO system of the background into the method of Greenstein. The motivation to combine the background and Greenstein would be to gain sensitivity by exploiting multi path propagation channel property (¶0002).

Re claim 14, Greenstein fails to teach an apparatus wherein the coded symbol is coded either in a diversity mode or in a multiplexing mode. However the background teaches coding incoming bits in a diversity MIMO system (¶0002).

Therefore taking the combined teachings of Greenstein and the background as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the diversity MIMO system of the background into the method of Greenstein. The motivation to combine the background and Greenstein would be to gain sensitivity by exploiting multi path propagation channel property (¶0002).

Re claim 15, Greenstein fails to teach an apparatus wherein the second transmitter is able to transmit two or more coded symbols (col. 3 lines 3-4, all of the carrier tones is interpreted to be more than one of the coded symbols) but fails to teach wherein at least some of the coded symbols are coded according the diversity mode and at least some other coded symbols are coded according to multiplexing mode.

However the background teaches coding bits in a diversity MIMO system (§0002) and suggests also coding at least some of the symbols in a multiplexing mode (§0003).

Therefore taking the combined teachings of Greenstein and the background as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the diversity and multiplexing coding of the background into the method of Greenstein. The motivation to combine the background and Greenstein would be to gain sensitivity by exploiting multi path propagation channel property (§0002) and to prevent an entire transmitted symbol from being in error (§0003).

Re claim 18, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 8.

Re claim 21, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 12.

Re claim 23, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 14.

Re claim 24, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 15.

Re claim 27, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 18.

Re claim 29, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 2.

Re claim 30, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 3.

Re claim 32, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 5.

5. Claims 10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greenstein et al (US6131016) and further in view of Wu et al (US6985434).

Re claim 10, Greenstein fails to teach an apparatus further comprising:
a channel state analyzer to select the coding mode based on a quality indicator

of the orthogonal frequency division multiplexing sub-carrier.

However Wu teaches a controller which selects either time diversity of spatial multiplexing encoding for two groups of sub-carriers (col. 5 lines 30-38), which is selected to satisfy quality of service (col. 5 lines 39-46).

Therefore taking the combined teachings of Greenstein and Wu as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the encoding mode selection of Wu into the apparatus of Greenstein. The motivation to combine Wu and Greenstein would be maximize the throughput gain (col. 5 lines 46-47).

Re claim 20, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 10.

6. Claims 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greenstein et al (US6131016).

Re claim 19, Greenstein teaches a wireless communication device comprising: a receiver transmitter system (fig. 2A) operably coupled to two or more dipole antennas wherein (fig. 2B, col. 4 lines 31-34), the multiple-in-multiple-out receivers transmitters system includes a transmitter system (transmission circuits 202 and 203 in fig. 2A) which includes a coding mode selector to select a coding mode of a symbol of an orthogonal frequency division multiplexing sub-carrier (col. 3 lines 59-63, col. 4 line 63 –

col. 5 line 1) according to a received channel state information that related to the orthogonal frequency division multiplexing sub-carrier (col. 4 lines 58-63).

Greenstein fails to teach wherein the receiver transmitter system is a multiple-in multiple-out system. However Greenstein does suggest using multiple receive antennas at the receiver (col. 4 lines 31-34). One of ordinary skill would have found it obvious to combine the receiver diversity (col. 4 lines 31-34) with the receiver transmitter base station (fig. 2A). The motivation to combine would be to further improve reception (col. 4 lines 31-34).

Re claim 22, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 13.

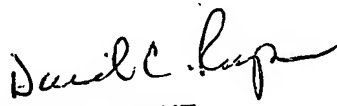
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon-Viet Q. Nguyen whose telephone number is 571-270-1185. The examiner can normally be reached on monday-friday, alternate friday off, 7:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon-Viet Nguyen/


DAVID C. PAYNE
SUPERVISORY PATENT EXAMINER